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Briefing Report to Congressional Requesters

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MILITARY FAMILY HOUSING

Observations on DOD Build-to-Lease and Rental-Guarantee Housing Programs

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National Security and
International Affairs Division

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October 9, 1986

The Honorable Strom Thurmond
Chairman, Subcommittee on Military
Construction
Committee on Armed Services
United States Senate

The Honorable Jeff Bingaman
Ranking Minority Member
Subcommittee on Military Construction
Committee on Armed Services
United States Senate

The Honorable Ronald V. Dellums
Chairman, Subcommittee on Military
Installations and Facilities
Committee on Armed Services
United States House of Representatives

The Honorable Ken Kramer
Ranking Minority Member
Subcommittee on Military Installations
and Facilities
Committee on Armed Services
United States House of Representatives

On November 26, 1985, you requested that we evaluate the methodology the Department of Defense (DOD) currently uses to determine whether build-to-lease and rental-guarantee housing projects, as authorized by Sections 801 and 802 of the Military Construction Authorization Act, 1984 (Public Law 98-115) are cost-effective when compared with traditional military housing, where the government builds and owns the housing project. (Under Section 801, the government can lease a project from a private developer. Under Section 802, the government guarantees up to 97-percent occupancy of privately owned rental housing.) Further, you asked that we determine the status of 801 and 802 projects already awarded.

In subsequent discussions with your offices, we agreed to address whether

(1) the process for selecting a proposal under Sections 801 and 802 complies with the law,

(2) quality differences exist between 801 and 802 housing projects and traditional military housing projects,

(3) the information being provided to the Congress is adequate for deciding whether to approve an 801 or 802 project, and

(4) leasing is more cost-effective.

We reviewed five of the initial eight 801 and 802 projects and discussed the programs with officials of the Office of the Secretary of Defense and headquarters and field office representatives of each of the services. In addition, we discussed the economic analyses which are used to demonstrate cost-effectiveness with representatives of the Office of Management and Budget. Our review was conducted between January and July 1986, in accordance with generally accepted government auditing standards.

We found that the services have generally complied with the laws authorizing 801 and 802 projects. However, we were unable to directly compare the quality of 801 and 802 housing units with units built under traditional military construction because of the stage of the projects at the time of our review, the lack of comparable housing units, and the subjective nature of quality determinations. DOD officials told us that the quality of 801 units should be about the same as traditional military construction. They also said that 802 units would be adequate but may not be as good as 801 or traditional military housing units because less money is used to construct 802 housing.

The economic analyses provided to the Congress on the 801 and 802 projects we reviewed were generally done in accordance with Office of Management and Budget guidance and showed that the 801 and 802 projects were less costly in present-value terms than the services' estimate of what it would cost the government to build and maintain the housing. In our opinion, however, this information may not be an adequate basis on which to approve an 801 or 802 project because of the uncertainty about the quality of leased housing noted above and the fact that, in soliciting proposals, DOD sets a maximum allowable cost that ensures that all successful 801 and 802 bids will be less costly than the military construction alternative. There is no assurance that the winning proposal will provide adequate housing at the least possible cost. Competition for awards tends to be on providing the most quality under the ceiling cost. Successful bids on the projects we reviewed were between 95 and 100 percent of the ceiling costs.

We also noted several potential problems in the implementation of the projects--such as a lack of guidance on the use of performance bonds and on the monitoring of units during construction.

The detailed results of our evaluation are contained in the four appendixes to this report:

-- Appendix I describes our objective, scope, and methodology;

-- appendix II provides background on the programs and responds to the four questions;

-- appendix III discusses DOD's implementation of the 801 and 802 programs; and

-- appendix IV contains selected information on the projects we reviewed.

As agreed with your offices, we did not obtain official agency comments. However, we discussed this briefing report with officials of the Office of Management and Budget and the Office of the Secretary of Defense, and their comments were considered in its preparation.

In commenting on our statement that there is no assurance that the 801 and 802 projects were obtained at the lowest price, Defense officials pointed out that DOD does not believe that the goal of the 801 and 802 programs, or of military family housing programs in general, was ever limited to the issue of low price but rather a combination of price and quality. Further, they stated that the issue we are raising concerning obtaining 801 and 802 housing at the least possible cost applies equally to traditional military housing projects.

We agree that the cost issue concerning the 801 and 802 programs would also apply to traditional military housing projects and recognize that both cost and quality need to be considered in evaluating proposals; however, in our opinion, the current evaluation methodology (discussed in app. II) places too much emphasis on quality and too little on cost.

As agreed with your offices, we plan no further distribution of this briefing report until 30 days from its issue date, unless you publicly announce its contents earlier. At that time, we will send copies to the Chairmen of the House and Senate Armed Services and Appropriations Committees, the House Committee on Government Operations, and the Senate Committee on Governmental Affairs; the Secretaries of Defense, the Army, the Navy, and the Air Force; and the Director of the Office of Management and Budget. In addition, we will provide copies to other interested parties. If you have any questions, please call me at 275-8412.

Martin M Ferber
Associate Director

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Abbreviations

ACRS	Accelerated Cost Recovery System
BAQ	Basic Allowance for Quarters
DOD	Department of Defense
OMB	Office of Management and Budget
OSD	Office of the Secretary of Defense
RFP	Request for Proposal
VHA	Variable Housing Allowance

OBJECTIVE, SCOPE, AND METHODOLOGY

The objective of our review was to provide information on the status of 801 and 802 housing programs and respond to the following four questions:

(1) Does the process for selecting a proposal under Sections 801 and 802 comply with the law?

(2) What quality differences exist between 801 and 802 housing projects and traditional military housing projects?

(3) Is the information being provided to the Congress adequate for deciding whether to approve an 801 or 802 project?

(4) Is leasing more cost-effective?

We reviewed five of the eight 801 and 802 projects in process at the time we began our work:

-- Fort Drum, New York (Army [801]--1,400 units--3 separate contracts);

-- Fort Wainwright, Alaska (Army [801]--400 units);

-- Fort Campbell, Kentucky (Army [802]--300 units);

-- Norfolk/Tidewater, Virginia (Navy [801]--300 units); and

-- Eielson Air Force Base, Alaska (Air Force [801]--300 units).

We chose these projects to provide coverage of both the 801 and 802 programs and to cover all three services. In addition, because of the short time available to perform our review, we chose projects for which pertinent records were available in a common geographic location.

We discussed the program with representatives of the Office of the Assistant Secretary of Defense (Acquisition and Logistics) and each service headquarters element responsible for the program--Army Corps of Engineers, Naval Facilities Engineering Command, and Air Force Directorate of Engineering and Services.

We reviewed records and interviewed individuals responsible for the development of the projects at the following field installations:

-- U.S. Army Corps of Engineers, Army Engineer Districts, Norfolk, Virginia; Anchorage, Alaska; and Louisville, Kentucky;

-- Naval Facilities Engineering Command, Atlantic Division, Norfolk, Virginia; and

-- U.S. Air Force Directorate of Engineering and Services, Alaskan Air Command, Anchorage, Alaska.

APPENDIX I

We also discussed DOD's economic analyses with representatives of the Office of Management and Budget (OMB) and reviewed the new guidance on performing economic analyses contained in the draft OMB Circular A-104.

We concentrated our work primarily on responding to the specific questions. We did not address the adequacy of the housing surveys that serve as the basis for justifying the need for additional housing at these sites. We are currently reviewing DOD's housing-survey methodology and will be issuing a report based on that work. Further, we accepted the military construction option as a given for comparison purposes in this report. We did not address any potential problems with military construction of housing or cost savings that could result from improvements to that process or changes to DOD's housing specifications.

Our review was conducted between January and July 1986, in accordance with generally accepted government auditing standards.

RESPONSES TO QUESTIONS ON SECTIONS 801 AND 802 MILITARY FAMILY HOUSING

BACKGROUND

As an alternative to the military's building its own housing, the Military Construction Authorization Act, 1984 (Public Law 98-115), authorized DOD to consider build-to-lease and rental-guarantee projects. Build-to-lease projects are those where DOD leases a newly constructed housing project for a period of up to 20 years from a private developer to provide military family housing. Rental-guarantee projects are those where DOD guarantees up to 97-percent occupancy for a housing project when the developer agrees to give priority consideration to renting to service members. The initial legislation authorized the Secretary of each military service to enter into two contracts for up to 300 units each of Section 801 build-to-lease housing and two contracts for up to 300 units each of Section 802 rental-guarantee housing, subject to certain conditions and restrictions. The programs were authorized for 1 year as pilot programs.

Subsequently, in the Military Construction Authorization Act, 1985 (Public Law 98-407), the Congress authorized the Secretary of the Army to enter into one additional 801 or 802 contract for up to 600 units to accommodate a major restationing of troops, and the Fiscal Year 1985 Continuing Resolution (Public Law 98-473) authorized the Secretary of the Army to enter into contracts for an additional 1,200 units of 801 housing to accommodate the new light infantry divisions.

The Military Construction Authorization Act, 1986 (Public Law 99-167), extended the pilot programs for all military services through September 30, 1986. In addition, it gave each of the services authority to enter into agreements for an additional 600 build-to-lease and 600 rental-guarantee housing units. Information on Congressional action on the programs for Fiscal Year 1987, was not available as of October 1, 1986.

Sections 801 and 802 of the 1984 act authorized only construction of new housing. Further, the act stipulated that 801 projects can be entered into only where a validated deficit in family housing exists, and 802 projects only where existing military-controlled housing at all installations in the commuting area has exceeded 97-percent use for a period of at least 18 months immediately preceding the date of the agreement.

The lease amount for 801 and rental amount for 802 housing is divided into a shelter rent (in theory, the amount needed to amortize construction costs) and a maintenance rent (to cover the cost of maintaining the project after construction). This division is necessary because the shelter rent is held constant throughout the period of the agreement, while the maintenance rent can change based on the Housing, Shelter, Maintenance, and Repair Index of the "Economic Indicators" prepared for the Joint Economic Committee of the Congress by the Council of Economic Advisors. In addition, under DOD's implementation of the programs, the government will pay 80 percent of any yearly increase in total general real estate taxes after the second year of the agreement.

Under the law, the following specific conditions and restrictions apply to each of the programs. For Section 801 housing,

-- the project is to be constructed on or near a military installation;

-- units are to be assigned rent free to eligible service members;

-- contracts are to be awarded through public advertising, competitive bids, or competitively negotiated contracting procedures;

-- contracts may provide for the contractor to operate and maintain the facility during the term of the lease;

-- the units are to be constructed to DOD specifications;

-- the lease may not exceed 20 years after the completion of construction;

-- the United States has the right of first refusal to acquire the project after the lease period; and

-- an economic analysis demonstrating that the project is cost-effective when compared to alternative means for providing the same facilities must be submitted to the appropriate committees of the Congress, after which the committees have 21 days to review the analysis.

For Section 802 housing,

-- a project can be constructed on private or public land;

-- the rental-guarantee agreement may ensure no more than a 97-percent occupancy rate;

-- the initial rental rate shall not be more than rates for comparable rental units in the same general area;

-- the agreed-upon rental-guarantee amount shall not be more than an amount equal to the shelter rent of the units determined on the basis of amortizing initial construction costs;

-- the housing is to be constructed to DOD specifications;

-- the rental guarantee is limited to a 15-year maximum guarantee and is not renewable;

-- the agreement shall provide for priority occupancy for military families;

-- the agreement shall contain a clause rendering the agreement null and void if the owner fails to maintain a satisfactory level of operation and maintenance; and

-- an economic analysis has to be submitted to the appropriate congressional committees under the same requirements as those for 801 projects.

RESPONSES TO QUESTIONS

1. DOES THE PROCESS FOR SELECTING A PROPOSAL UNDER SECTIONS 801 AND 802 COMPLY WITH THE LAW?

The projects we reviewed were among the first group of 801 and 802 projects, and each was at a different stage of development. Differences existed from project to project in developing comparative costs for use in the economic analysis, and different approaches were used in evaluating proposals and planning for monitoring construction of the projects. However, based on our review of the available documentation and on discussions with staff responsible for implementing the projects, we concluded that the projects we reviewed generally complied with the laws authorizing 801 and 802 housing projects.

For the 802 project we reviewed, the Corps of Engineers had not addressed whether the agreed-upon rental-guarantee amount would exceed an amount equivalent to the shelter rent of the units determined on the basis of amortizing initial construction costs--a requirement of the law. DOD officials told us that, in future 802 projects, the successful bidder would be required to submit construction costs, and the rental-guarantee agreement would address the amortization issue.

2. WHAT QUALITY DIFFERENCES EXIST BETWEEN 801 AND 802 HOUSING PROJECTS AND TRADITIONAL MILITARY HOUSING PROJECTS?

We were unable to directly compare the quality of 801 and 802 housing with traditional military housing because 801 or 802 units had been constructed at only one site (Eielson Air Force Base) at the time of our review, and that site did not have any traditional military housing that had been recently constructed. In addition, while architectural drawings and descriptive material existed for proposed 801 and 802 projects, no similar documentation was available for traditional military housing that had recently been constructed or was about to be constructed in the same geographic areas as the projects we reviewed.

Even if actual housing or other data were available, the subjective nature of determining "quality" housing would make comparisons difficult. While the materials used to build two houses may be very similar and their square footage the same, the houses may vary greatly in design, the layout of the site, and the provision of amenities (such as lighting fixtures, extra parking, or decorative interior moldings). Individuals evaluating housing alternatives will assign different values to particular amenities and, therefore, differ in their judgment of quality.

APPENDIX II

The evaluation of proposals for 801 and 802 projects is similar to that for proposals for traditional military housing. That is, proposals are evaluated on the basis of site design, site engineering, dwelling-unit design, and dwelling-unit engineering. In addition, a fifth category--"Maintenance, Repair, and Operational Services"--is considered for 801 and 802 projects because the builder is responsible for providing maintenance and operation services. The evaluation categories are defined as follows:

1. Site design consists of such items as site utilization and development orientation, vehicular and pedestrian circulation, compatibility with surroundings, landscaping, and recreational facilities. (300 points)

2. Site engineering consists of topography; drainage; erosion control; and street, drive, and sidewalk construction. Site engineering also includes specifications for distribution systems, fire protection, street lighting, and landscaping schedules. (100 points)

3. Dwelling-unit design deals with the details of the actual layout of the units. This would include unit type--such as single, duplex, or row units; net floor areas; gross areas; entry yards; patios; fencing; lighting; room design; interior and exterior aesthetics; interior and exterior storage; and occupant maintenance and safety. (500 points)

4. Dwelling-unit engineering consists of those elements of engineering and specifications which relate to the structural, electrical, mechanical, and other engineering features of the structures. Equipment, materials, energy conservation, and other features are also considered under this element. (100 points)

5. Maintenance, repair, and operational services is based on a comprehensive technical proposal that describes, demonstrates, or supports accomplishment or provision of requirements contained in the Request for Proposal relating to maintenance, repair, and operational services. (200 points)

The points shown above were taken from the model Request for Proposal (RFP) that DOD developed as guidance to the services. Points are awarded for each proposal in each area and are then totaled. The annual costs are divided by total quality points to provide a cost-quality ratio. The lowest cost-quality ratio is the winning proposal. That is, the highest number of quality points per dollar wins the competition.

We reviewed the evaluation reports on proposals submitted for 801 and 802 projects and discussed the relative-quality issue with a representative of each of the field offices we visited. At each of the field offices, officials told us that the quality of 801 housing should be about the same as the quality of housing that would be built under military construction since the estimated cost of the military construction alternative is used to establish the ceiling cost for an 801 project.

An official at the Louisville District of the Corps of Engineers also told us that the quality of housing built under the 802 program would be "adequate" in that the houses would meet existing local codes and conform to at least minimum DOD specifications, but that 802 housing might not be as good as either 801 or traditional military housing because less money is used to build 802 housing. Under 802, the maximum allowable cost is related to service members' ability to pay, based on their Basic Allowance for Quarters (BAQ) and Variable Housing Allowance (VHA). This amount is substantially less than the cost of constructing 801 or traditional military housing. For example, at Fort Drum, Corps of Engineer analysts estimated that BAQ plus VHA for the target population would be about $420 per month, which should cover 85 percent of rent and utilities; however, the initial monthly lease cost per unit at the 801 project being built will be $743, excluding utilities.

3. IS THE INFORMATION BEING PROVIDED TO THE CONGRESS ADEQUATE FOR DECIDING WHETHER TO APPROVE AN 801 OR 802 PROJECT?

The law requires that the Secretary of Defense submit to the appropriate congressional committees an economic analysis which demonstrates that the proposed 801 or 802 project is cost-effective when compared to alternative means of furnishing the same housing facilities. To implement this requirement, DOD--after selecting a proposal--submits an economic analysis to the House and Senate Armed Services and Appropriations Committees for each project, which compares--in present-value terms--the costs of the project with the estimated cost to the government to build and operate the project for the planned life of the lease or rental guarantee.

The economic analyses we reviewed, however, do not appear to provide an adequate basis for deciding which proposal is most cost-effective. DOD calculates the estimated cost of the military construction option or the ability of the service member to pay which becomes the maximum allowable cost for an 801 or 802 project, respectively. Responsive proposals cannot exceed this cost. As a result, competition tends to be based more on quality than price. Setting a ceiling and ranking proposals based on a cost-quality ratio tends to encourage bidders to offer the highest quality possible within the ceiling. Therefore, the government has no assurance that it is obtaining adequate housing at the least cost. For each of the projects in our review, we found that the winning proposal was between 95 and 100 percent of the maximum allowable cost. (See app. IV.) For two of the projects, a 5-percent reduction in cost was negotiated after the winning proposal was selected.

The Navy plans to experiment with a modified method of selecting contractors for traditional military housing construction projects at selected sites. Under this procedure, proposals received in response to an RFP will be evaluated on cost and quality. Then the bidder providing the lowest cost and an acceptable project will be awarded the contract. A Navy official told us that the Navy hopes that this revised procurement procedure will stimulate price competition as opposed to primarily quality competition on military construction projects. This experiment deals only

with the military construction alternative. If it proves to be effective, it could possibly be used for 801 and 802 housing.

DOD officials told us that they believe that providing information on the assumptions being made concerning a particular project to the appropriate committees before the bid process and obtaining prior agreement on the assumptions underlying the cost estimates would help improve the usefulness of the information. DOD has begun submitting this information with fiscal year 1986 projects. In our opinion, providing information prior to the bid process should increase the value of the information for congressional decision-making.

4. IS LEASING MORE COST-EFFECTIVE?

Recognizing the limitations of the economic analysis cited in the preceding section, we evaluated the economic analyses for four 801 projects and one 802 project and found that they were generally done in accordance with OMB guidance.

DOD's economic analyses show each of the projects to be cost-effective when compared to the military construction option. However, we have an overall concern. Other factors should be considered when an economic analysis shows that leasing is less expensive than construction.[1] In a leasing arrangement, middlemen will likely borrow money at a higher interest rate than the government. As a result, if everything else is equal, leasing should be more expensive than military construction unless special circumstances reduce the lessor's cost. For example, these circumstances could include

-- the leased housing being of inferior quality or

-- the construction methods used for leased housing being more economical than those used for military construction.

Economic analyses that find leasing to be less expensive should address any such circumstances. If there are no special circumstances, and other things are equal, a study which finds leasing to be less expensive may be methodologically flawed.

We also have a difference of opinion, which has not been resolved, with OMB's guidance on the treatment of depreciation and its impact on tax revenues. In the past, we have recommended that economic analyses of lease-versus-buy decisions account for the total cost to the government. This cost may differ from the cost to a single agency. For example, in the case of 801 and 802 projects, contractors may claim depreciation for tax purposes, and tax revenues may decrease because of these depreciation allowances. In effect, the loss of tax revenues increases the cost of 801 and 802 housing to the government and could make military construction more cost-effective.

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[1]Overseas Housing: Analysis of Overseas Housing Costs Are Misleading to Decision-Makers (GAO/NSIAD-86-82, June 1986).

According to OMB guidance, the economic analyses for 801 and 802 proposals consider the revenue loss only to the extent depreciation calculated under the Accelerated Cost Recovery System (ACRS) exceeds the depreciation calculated under the straight-line schedule. Thus, the economic analyses may underestimate the revenue losses due to leasing by not considering the full depreciation allowance. An OMB official told us that, in OMB's view, only revenue reductions in excess of economic depreciation should be considered in estimating the cost to the government of the build-to-lease alternative and that straight-line depreciation equates to economic depreciation.

Two DOD studies should help to answer some of the concerns about the economic analyses and the validity of cost estimates. The Air Force has issued an RFP for a study to document the costs associated with quality differences between traditional military housing and private-sector housing and to validate site-development costs as a percentage of construction costs. The study is to be completed by June 30, 1987. In addition, an Office of the Secretary of Defense official told us that DOD is reviewing maintenance-cost estimates to ensure that they are more realistic and consistent for future projects.

APPENDIX III

OBSERVATIONS ON DOD'S IMPLEMENTATION OF THE 801 and 802 HOUSING PROGRAM

We have several observations on DOD's implementation of the 801 and 802 programs concerning the

-- methods used to estimate a maximum allowable cost for 801 projects,

-- lack of guidance on the extent of inspection required for 801 and 802 projects,

-- lack of guidance on the use of performance bonds to secure contractor performance, and

-- formula used to estimate a maximum allowable cost for 802 projects.

METHODS USED TO ESTIMATE 801 CEILING COSTS

The maximum allowable cost included in the RFPs for 801 housing projects is established by estimating what it would cost the government to build and operate the housing development for the projected life of the lease. The reasoning behind using that cost as the maximum allowable cost is that any build-to-lease proposal less than that amount would be cost-effective. To estimate the maximum allowable cost, the services use the Tri-Service Cost Model (fig. III.1) to arrive at construction and supporting costs. They then add (1) maintenance and repair costs, based on historical data, (2) an estimate of administrative costs for operating the development, (3) imputed property taxes and liability insurance costs, and (4) imputed cost of land. This total is then used to determine the "net present value" of the project if constructed on base. This is the services' estimate of what the project would cost if built as a traditional military housing project. From that total, the services subtract the potential effect on government revenues due to tax implications (such as depreciation expense) and the potential cost of assuming 80 percent of any yearly real estate tax increase on the project. The remainder is the maximum shelter and maintenance rent that the developer can charge and still be under the maximum allowable cost.

Figure III.1: Tri-Service Family Housing Cost Model

Service_____ Location_____

BASELINE:

( ) ( ) ( )		= $
(No. units) (ANSF)[a] ($/NSF)[b]		= 5' Line Cost[c]

PROJECT FACTORS:

( ) ( ) ( )			
(ACF)[d]	(Project size)	(Unit Size)	= Project Factor

HOUSING COST:

( ) ( )		= $
(5' Line Cost)	(Project Factor)	= Adjusted 5' Line Cost
( ) ( ) ( )		= $
(Solar Unit Cost)	(ACF) (Units)	= Total Project Solar Cost
( ) + ( )		= $
(Adjusted 5' Line Cost) + (Solar)		= Housing Cost

SUPPORTING COST:

Site Preparation
Roads and paving
Utilities
Recreation
Landscaping
Special Construction

= $
= Support Cost

SUMMARY:

( ) + ( )		= $
(Housing Cost)	+ (Support Cost)	= Subtotal
( ) + ( ) + ( )		= $ Say: $
(Subtotal) + (Contingency)	+ (SIOH)[e]	= Project Cost (Round)
( )/( ) ( ) ( )		= $
(Project Cost)/(No. Units)	(ANSF) (ACF)	= Proj cost/sq ft/ACF

[a]ANSF - Average net square feet/unit.

[b]NSF - Net square feet.

[c]5' Line cost - Cost for the housing unit construction.

[d]ACF - Area cost factor.

[e]SIOH - Site inspection and overhead.

The Tri-Service Cost Model estimates the cost of a project in the following manner. First, a baseline cost is determined by

-- multiplying the number of planned units by the average net square footage of the units and

-- multiplying this product by a predetermined dollar per square foot.

The average net square footage is the actual living space within the unit and is set according to the rank of the service member for whom the housing is planned. The dollars-per-net-square-foot figure, taken from DOD's "Unit Prices for Common DOD Facilities," is based on historical bid data from all three services, inflated to current dollars. For 801 projects to date, the unit price of family housing has been $46 per square foot. This cost will increase to $48 for fiscal year 1987. The $46 figure was the cost basis used for each of the projects we reviewed.

Second, the baseline cost is adjusted by a "project factor" to arrive at "housing cost." The project factor is computed by

-- multiplying an area-cost factor by a project-size factor and

-- multiplying this product by a unit-size factor.

The area-cost factor represents an index based on labor and materials costs, which adjusts for variations in costs in different geographic areas. For example, the area-cost factor for Washington, D.C., is 1.03, whereas it is .95 for Norfolk, Virginia, and 1.18 for Fort Drum, New York. The project-size factor is an adjustment to reflect the savings from larger versus smaller projects. For example, the project-size factor for a 100- to 199-unit project is 1.00; for a project of 500 or more units, it is .95; and for a project of less than 50 units, it is 1.05. Similarly, an adjustment--unit-size factor--is made to reflect the savings that result from building larger units.

Third, the cost of solar design, adjusted by the area-cost factor, and support costs are added to the housing cost. DOD has decided, based on past experience, that future projects will use a flat 30 percent of housing cost for support costs.

Fourth, a cost for site inspection and overhead and contingencies is added. In the model, this cost is estimated to be 10.5 percent of the housing, solar, and support cost.

Finally, the cost of land is added. This cost is imputed by estimating the fair market value of land on base.

Questions concerning cost estimates

In our opinion, this method of estimating costs raises several questions. First, the dollar cost per net square foot is based on historical information for bids received for traditional military housing projects and, according to the proposed Air Force study of military family housing costs, is one of the variables which warrant analysis to determine whether they are comparable to private-sector costs. These costs may differ from costs associated with private-sector construction of houses. Second, the area-cost factor is based on material and labor costs, both of which may be volatile, and changes in these costs may not relate directly to changes in the cost of building new housing because of market factors related to the condition of the local economy. Third, the use of a flat 30 percent of housing cost for support costs may under- or overstate these costs for any specific project. For example, we found that estimated support costs in the projects we reviewed ranged from 23 to 42 percent of housing costs.

In addition to the project-construction costs, estimates of maintenance costs are also subject to question. We found wide variations in the estimates of maintenance costs. For example, estimates of maintenance costs for the two projects located in Fairbanks, Alaska, were $720 and $1,817 per unit per year, respectively, for first-year maintenance costs. In each of the projects we reviewed, except Eielson Air Force Base, the estimated maintenance costs were based on historical costs associated with maintaining traditional military housing. At Eielson, the $720 for maintenance included in the winning proposal was used for both alternatives.

GUIDANCE ON MONITORING ACTIVITIES

Each of the RFPs we reviewed contained a clause that called for the project to be "monitored" during construction. The RFP also called for a "final inspection" before acceptance of the units. We found that "monitoring" had not been defined and that the procedures being followed or planned differed from project to project.

Developers of 801 and 802 projects are required to obtain whatever state or local building permits are needed for the particular area in which the project is being constructed. Inspection to ensure compliance with local codes is the responsibility of the local government. Any additional monitoring to ensure that the builder is complying with the terms of the RFP is the responsibility of the service involved.

At one project we reviewed, the Army official who would be responsible for inspections was told by the contracting officer to 'monitor" the project and to bring any questions to the attention of the developer. However, the official was also told that any problems he noted would be dealt with during the final inspection.

Another RFP specifically required the builder to establish a quality-control program to ensure that the contract requirements were met. Under

this approach, the government can review documentation on the inspections done under the builder's quality-control program and conduct a final inspection after receiving an occupancy permit from the local government authorities.

An Army Corps of Engineers official told us that two schools of thought exist on the question of monitoring within the Corps. According to one school, normal inspection is not required since an 801 or 802 project is not a military construction project, and time spent monitoring construction could, by implication, relieve the developer of the quality-control responsibility. Conversely, others believe that, if the government does not conduct regular inspections, there will be no assurance that the project will be built according to the agreement.

DOD officials expressed the view that full-time inspection comparable to what is done for traditional military construction projects is not necessary because third parties--such as local governments and lending institutions--are involved in ensuring that projects are properly built. While we agree that full-time inspection may not be necessary, we believe that guidance to the services on the level of monitoring that should be conducted would be beneficial.

USE OF PERFORMANCE BONDS

We found that only one of the five sites we reviewed required that the developer post a performance bond. At another site, liquidated damages for construction delays were to be deducted from the lease amount. An OSD official responsible for the 801 and 802 programs told us that, although guidance to the services does not address the use of performance bonds in 801 or 802 projects, the model RFP does contain language dealing with construction delays and defaults. Under the language included in the model RFP, if a developer fails to complete construction before the agreed-upon date (unless the developer is not at fault for the delay), the government can (1) cancel the agreement, (2) establish a new schedule for completion, or (3) assess liquidated damages to be deducted from any rental payments due under the lease. Nonperformance that results in a project's not being completed would be harmful to the government, especially in cases such as Fort Drum, New York, where other living quarters may not be available. Performance bonds could help protect the government because the bonding agent would have investigated the developer's ability to carry out the proposal.

FORMULA FOR SETTING CEILING COST FOR 802 HOUSING

The formula used to set the ceiling cost for 802 housing is based on service members' ability to pay rather than on the government's cost to build and operate the housing development--as is the case with the 801 housing program. As a result, the 802 ceiling cost is substantially lower, which limits the geographic areas in which the 802 program is viable and,

as discussed in appendix II, may result in housing that is of lower quality than 801 or traditional military housing.

The formula used to set the ceiling cost for Section 802 projects is

$$\frac{\text{BAQ + VHA}}{.85} = \text{X - utility costs = first-year cost.}$$

BAQ plus VHA is intended to cover 85 percent of a service member's housing costs, including the cost of utilities. Under the above formula, "X" equals 100 percent of housing costs. Estimated utility costs are subtracted to arrive at the total rent. The total rent is made up of two parts, a shelter rent and a maintenance rent. The shelter rent is required to be held constant throughout the period of the agreement and is the portion of the rent that the government guarantees. The maintenance rent can be increased yearly by an inflation factor.

In theory, the shelter rent should be an amount that is adequate to amortize the construction costs and should enable the developer to obtain financing for the project. However, the developer may find financing difficult to obtain because a significant portion of the rent is frozen, and increases in the remainder are tied to an estimate of inflation. According to Corps of Engineers officials, both of the selected developers for the two current 802 projects are experiencing difficulty in obtaining financing for these reasons.

Basing the rent on service members' housing allowance is a reasonable approach since they will have to pay the rent from their allowance. This approach, however, tends to limit 802 housing to those parts of the country where housing and maintenance costs are comparatively low. This effect could be mitigated if the shelter rent could increase with inflation as does the maintenance rent. To prevent increasing the rents beyond the service members' ability to pay, increases could be tied to increases in BAQ plus VHA. Under current regulations, service members can keep 50 percent of excess VHA payments as untaxed income so the net cost to the government would be the remaining 50 percent.

Under such an approach, developers would likely be more willing to submit bids for 802 projects. Also, financial institutions may be more willing to provide financing for these projects, even if they determined that the initial rental-guarantee level would be insufficient to amortize initial construction costs. Even with the added costs to the government (the 50 percent of excess VHA payments), 802 housing would probably remain a less expensive alternative than 801 housing.

DOD officials agreed that adopting our suggestion could improve the viability of the 802 program. DOD plans to use this approach for future 802 projects.

SELECTED INFORMATION ON 801 AND 802 PROJECTS

The following tables provide information on 801 and 802 projects. Table IV.1 lists current and proposed projects. Table IV.2 shows selected cost information on the five sites we reviewed. Table IV.3 shows comparative information on cost and quality of proposals on these sites. Table IV.4 shows estimated maintenance and site preparation costs for the five sites.

Table IV.1: Status of Section 801 and 802 Projects as of June 1986

Location	Service	Type	No. of units	Current status
Eielson Air Force Base, Alaska	Air Force	801	300	units constructed
Hanscom Air Force Base, Massachusetts	Air Force	801	163	under construction
Fort Drum, New York	Army	801	1,400	under construction
Fort Polk, Louisiana	Army	801	300	contract awarded
Fort Wainwright, Alaska	Army	801	400	contract awarded
Norfolk/Tidewater, Virginia	Navy	801	300	contract awarded
Fort Rucker, Alabama	Army	802	300	contract awarded
Fort Campbell, Kentucky	Army	802	300	contract awarded
Naval Weapons Station Earle, New Jersey	Navy	801	300	RFP issued
Mayport, Florida	Navy	801	200	RFP issued
Staten Island, New York	Navy	801	200	RFP issued
Twentynine Palms, California	Navy	801	200	RFP issued
Fort Drum, New York	Army	801	300	RFP issued
Fort Polk, Louisiana	Army	801	300	RFP issued
Fort Hood, Texas	Army	801	300	RFP issued
Goodfellow Air Force Base, Texas	Air Force	801	200	RFP issued
March Air Force Base, California	Air Force	801	200	RFP issued
Castle Air Force Base, California	Air Force	801	200	RFP issued
Fort Hood, Texas	Army	802	500	RFP issued
St. Louis Support Facility, Illinois	Army	802	100	RFP issued

Table IV.2: Selected Cost Information on the Five Sites Reviewed

Site	Maximum allowable cost in RFP	Actual cost	Actual cost as a percent of maximum cost	First-year monthly rent per unit
	------(thousands)-----			
Fort Drum (801)[a]				
600 units	$5,362	$5,350	99.77	$ 743
400 units	3,576	3,576	100.00	745
400 units	3,576	3,566	99.74	743
Fort Wainwright (801) 400 units	8,140	7,731[b]	94.97	1,611
Norfolk/Tidewater (801) 300 units	3,649	3,467[b]	95.00	963
Eielson Air Force Base (801) 300 units	3,960	3,816	96.36	1,060
Fort Campbell (802) 300 units	1,162	1,162	100.00	323

[a]There were three separate awards at Fort Drum--one for 600 units and two for 400 units each.

[b]Initial bids of the selected developer were 100 percent of the maximum allowable costs for Fort Wainwright and Norfolk/Tidewater. However, a 5-percent reduction from the initial bid was negotiated during the award process.

Table IV.3: Comparative Cost and Quality Information on the Five Sites Reviewed

Site	No. of bids	Rank of winning bids[a] Price	Quality	Range of bids High	Low	Quality point range High	Low
				-(thousands)-			
Fort Drum (801)							
600 units	2	1	1	$5,350	$5,141	781	644
400 units	7	1	1	3,576	2,808	780	311
400 units	7	3	2	3,576	2,808	780	311
Fort Wainwright (801)							
400 units	6	2[b]	1	8,368	6,838	984	806
Norfolk/Tidewater (801)							
300 units	8	1	1	3,467[c]	2,740	752	418
Eielson Air Force Base (801)[d]							
300 units	4	N/A	N/A	N/A	N/A	N/A	N/A
Fort Campbell (802)							
300 units	4	3	1	1,162	1,154	790	673

[a]"1" is the highest price or quality ranking.

[b]The winning proposal was initially the highest-priced proposal. However, one bidder raised the price when best and final offers were requested and, as a result, became the highest bidder. That bid was above the maximum allowable ceiling and could not have been accepted.

[c]The high bid represents the final offer after a 5-percent negotiated reduction from the initial bid of $3,649,000.

[d]Information on bids other than the winning proposal was not readily available for the Eielson Air Force Base project.

Table IV.4: Estimated Maintenance and Site Preparation Costs for the Military Construction Option at the Five Sites Reviewed

Site	Estimated maintenance costs	Estimated site-preparation cost	
		Amount	Percent of housing cost
	(thousands)		
Fort Drum (801)			
600 units	$1,004	$ 7,941	25
400 units	1,004	5,540	25
400 units	1,004	5,540	25
Fort Wainwright (801)			
400 units	1,817	13,680	30
Norfolk/Tidewater (801)			
300 units	2,000	5,587	23
Eielson Air Force Base (801)			
300 units	720[a]	13,937	42
Fort Campbell (802)			
300 units	967	2,971	25

[a]Maintenance costs are taken from the winning proposal and are not based on an Air Force estimate of maintenance costs.

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